

Response to Official Action

Dated 31 January 2007

Re: USSN 10/630,189

Page 2

Please amend the claims to read as indicated in the following list of claims:

1. [Currently amended] An optical frequency modulated transmitter comprising:

(a) a plurality of slave lasers, each of the slave lasers having an output, the outputs of the plurality of slave lasers being combined to form a single output beam of the optical frequency modulated transmitter, ~~the lasers of the plurality of slave lasers being injection locked and being separately phased-controlled by a bias current or voltage which is applied to each slave laser for adjusting the phase thereof relative to other slave lasers in said plurality of slave lasers;~~ and

(b) a master optical oscillator which outputs an optical signal for the injection locking of said plurality of slave lasers, the optical signal outputted by the master oscillator being frequency modulated directly in the master optical oscillator or externally thereof;

wherein the lasers of the plurality of slave lasers are injection locked to the master optical oscillator and are separately phased-controlled by a bias current or voltage which is applied to each slave laser for adjusting frequency detuning of said slave laser with respect to said master optical oscillator thereby adjusting the phase of each slave laser relative to other slave lasers in said plurality of slave lasers.

Response to Official Action

Dated 31 January 2007

Re: USSN 10/630,189

Page 3

2. [Original] The transmitter of claim 1, wherein optical signal outputted by the master oscillator is modulated in an external modulator.

3. [Original] The transmitter of claim 1, wherein the master oscillator is modulated in response to an application of a modulation current or voltage thereto to thereby modulate the outputted optical signal.

4. [Original] The transmitter of claim 3, at least one optical isolator disposed between said master oscillator and said plurality of slave lasers to prevent unwanted injection of laser light back into the master oscillator from the slave lasers.

5. [Original] The transmitter of claim 4, wherein the master oscillator and the plurality of slave lasers are each optical devices which output light of a single carrier frequency.

6. Cancelled.

7. [Previously presented] The transmitter of claim 21 wherein a bias current or voltage is applied to each slave laser for adjusting the phase thereof relative to other slave lasers in said plurality of slave lasers.

8. Cancelled.

9. [Currently amended] The transmitter of claim [[1]] 10 further including

Response to Official Action

Dated 31 January 2007

Re: USSN 10/630,189

Page 4

~~a plurality of power oscillators arranged in a cascade arrangement upstream of the plurality of phase shifters coupled to the plurality of power oscillators and the plurality of slave lasers and wherein the plurality of phase shifters and the plurality of slave lasers are arranged in a plurality of groups thereof, each group of slave lasers being injection locked to a separate one of the power oscillators of the plurality of power oscillators.~~

10. [Original] The transmitter of claim 1 further including a plurality of power oscillators arranged in a cascade arrangement upstream of the plurality of slave lasers and wherein the plurality of slave lasers are arranged in a plurality of groups thereof, each group of slave lasers being injection locked to a separate one of the power oscillators of the plurality of power oscillators.

11. [Original] The transmitter of claim 1 wherein the slave lasers in addition to being injection locked to the master oscillator, are each arranged in a phase locked loop.

12. Cancelled.

13. Cancelled.

14. [Currently amended] A method of frequency modulating an optical beam comprising the steps of[[;]]:
providing a plurality of slave lasers, each of the slave lasers having an output, the outputs of the plurality of slave lasers being combined to form the optical beam,

Response to Official Action

Dated 31 January 2007

Re: USSN 10/630,189

Page 5

injection locking the plurality of slave lasers to an optical output of a master oscillator;

frequency modulating the optical output of the master oscillator before the optical output thereof is applied to the plurality of lasers; and

individually phase controlling the slave lasers of the plurality of slave lasers by adjusting a current or voltage applied to each of the slave lasers in the plurality of slave lasers to (i) thereby frequency detune each slave laser with respect to said master laser and (ii) thereby adjust the phase of each slave laser relative to other slave lasers in said plurality of slave lasers in order to steer the optical beam.

15. [Currently amended] The method of claim [[14]] 19 wherein the step of individually phase controlling the slave lasers in the plurality of slave lasers is performed in order to steer the optical beam.

16. [Original] The method of claim 14 wherein the step of individually phase controlling the slave lasers in the plurality of slave lasers is performed in order to achieve wavefront coherence of the optical beam.

17. Cancelled.

18. Cancelled.

19. [Previously presented] A method of frequency modulating an optical beam comprising the steps of;

Response to Official Action

Dated 31 January 2007

Re: USSN 10/630,189

Page 6

providing a plurality of slave lasers, each of the slave lasers having an output, the outputs of the plurality of slave lasers being combined to form the optical beam,

injection locking the plurality of slave lasers to an optical output of a master oscillator;

frequency modulating the optical output of the master oscillator before the optical output thereof is applied to the plurality of lasers;

individually phase controlling the slave lasers of the plurality of slave lasers;

arranging the plurality of slave lasers in groups; and

providing a power oscillator for each group arranged in series between the slave laser and the master oscillator whereby the master oscillator injection locks the power oscillator for each group directly and each slave laser indirectly via one of power oscillators.

20. [Original] The method of claim 14 further including phase locking each slave laser individually utilizing a phase lock loop associated with each slave laser in the plurality of slave lasers.

21. [Previously presented] An optical frequency modulated transmitter comprising:

(a) a plurality of slave lasers, each of the slave lasers having an output, the outputs of the plurality of slave lasers being combined to form a single output beam of the optical frequency modulated transmitter, the lasers of the plurality of slave lasers being separately phased-controlled;

Response to Official Action

Dated 31 January 2007

Re: USSN 10/630,189

Page 7

(b) a master optical oscillator which outputs an optical signal for injection locking said plurality of slave lasers, the optical signal outputted by the master oscillator being frequency modulated directly in the master optical oscillator or externally thereof; and

(c) a plurality of power oscillators arranged in a cascade arrangement upstream of the plurality of slave lasers and wherein the plurality of slave lasers are arranged in a plurality of groups thereof, each group of slave lasers being injection locked to a separate one of the power oscillators of the plurality of power oscillators.

22. [Previously presented] The transmitter of claim 7 wherein adjusting the phase of one slave laser relative to other slave lasers in said plurality of slave lasers causes the single output beam of the optical frequency modulated transmitter to be steered.

23. [Previously presented] The transmitter of claim 1 wherein adjusting the phase of one slave laser relative to other slave lasers in said plurality of slave lasers causes the single output beam of the optical frequency modulated transmitter to be steered.

24. [Previously presented] The transmitter of claim 21 wherein the slave lasers in addition to being injection locked to the master oscillator, are each arranged in a phase locked loop.

Response to Official Action

Dated 31 January 2007

Re: USSN 10/630,189

Page 8

25. [Previously presented] The transmitter of claim 21 further including a plurality of phase shifters, each phase shifter of said plurality of phase shifters being associated with and coupled upstream of one slave laser of said plurality of slave lasers for adjusting the phase thereof relative to other slave lasers in said plurality of slave lasers.

26. [Currently amended] The method of claim 19 ~~18~~ wherein the step of individually phase controlling the slave lasers in the plurality of slave lasers is performed by a phase shifter arranged in series between each slave laser in the plurality of slave lasers and the master oscillator.